SEP 27 2007

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)
	)
Kar Yan Tam et al.	) Group Art Unit: 2132
	)
Application No.: 09/965,831	) Examiner: BENJAMIN E LANIER
	)
Filed: October 1, 2001	) Appeal No.: _____
	)
For: METHODS FOR EMBEDDING	)
DATA IN DIGITAL AUDIO DATA	)
	)
	)

APPEAL BRIEF

Mail Stop APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal is from the decision of the Primary Examiner dated January 29, 2007 finally rejecting claims 1 and 3-32, which are reproduced as the Claims Appendix of this brief.

⊠   Charge ⊠ $ 250 ☐ $ 500 to Credit Card. Form PTO-2038 is attached.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.17 and 4.20 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

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I. Real Party in Interest

The Hong Kong University of Science and Technology is the real party in interest, and is the assignee of Application No. 09/965,831.

II. Related Appeals and Interferences

Appellant's legal representative, or assignee, does not know of any other appeal, interference, or judicial proceeding that will affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of Claims

A.   There are 35 total claims currently pending in the application.

B.   Current Status of Claims

1.   Claims canceled: 2

2.   Claims withdrawn from consideration but not canceled: None

3.   Claims pending: 1 and 3-36

4.   Claims allowed: None

5.   Claims rejected: 1 and 3-36

IV. Status of Amendments

An Amendment was filed subsequent to the final Office Action on January 29, 2007. In an Advisory Action dated June 6, 2007, entry of the Amendment was denied.

V. Summary of Claimed Subject Matter

The instant application is directed to a method and apparatus in which an audio signal is watermarked (page 9, lines 9-14). The watermarked audio signal is split into at least two separate sections where the watermark information is spread over both sections (page 11, lines 6-17). The watermark includes copyright

information used for copyright control such as parameters that stipulate whether the audio signal may be copied and the number of times played under the user's license (page 9, lines 12-15). The first section of the watermark signal is distorted so that it may not be played without the use of a key, which is embedded in the second section of the audio signal (page. 11, lines 6-17). Because the watermark signal is spread over all sections of the audio signal, including the portion holding the key, any attempt to alter the watermark will destroy the embedded key so that the first section of the audio signal can no longer be recovered and played without distortion (page 13, lines 16-21). As a result, the embedded key indirectly protects the watermark. In addition, because the key is embedded in the audio content of the second section of the audio signal, the second section cannot be removed because doing so would corrupt the key for unlocking the first section (paragraph beginning a page 11, line 18). As a result, the first section could not be played without distortion.

The table, which follows, maps Appellant's independent claims to those portions of the disclosure that support the recited feature.

Claim #	Claim element	Support
Claim 1	A method of embedding watermarking data in an audio signal, comprising the steps of: (a) incorporating watermarking information into said audio signal, to form a watermarked audio signal	pg. 8, lines 12-15; pg. 9, lines 9-15
	(b) sectioning said watermarked audio signal into at least two sections each section having audio content,	pg. 9, lines 16-18
	(c) marking at least one of said sections whereby said sections may be identified,	pg. 9, lines 16-18
	(d) generating distortion in a first one of said sections of said signal in a manner recoverable by a key obtainable from at least one other section having audio content,	pg. 10, lines 3-9
	(e) appending said distorted section to said at least one other section to form a composite signal comprising a distorted section and at least one undistorted section.	pg. 10, lines 9-10

Claim 23	An apparatus for embedding watermarking data in an audio signal, comprising: (a) means for incorporating watermarking information into said audio signal to form a watermarked audio signal,	pgph bridging lines 10-11; means includes device configured through programming code to execute a robust watermarking function
	(b) means for sectioning said watermarked audio signal into at least two sections each having audio content,	pg. 9, lines 9-18; pg. 10, line 13 - pg. 1, line 5; means includes device configured through programming code to execute a watermarking function
	(c) means for marking at least one of said sections whereby said sections may be identified,	pg. 11, lines 6-17; means includes device configured through programming code to execute a robust watermarking with section information
	(d) means for generating distortion in one of said sections of said signal in a manner recoverable by a key obtainable from at least one other section having audio content, and	pgph bridging pages 11 and 12; means includes device configured through programming code to execute a pseudo-random number generator function
	(e) means for appending said distorted section to said at least one other section to form a composite signal comprising a distorted section and at least one undistorted section.	pg. 10, lines 9-10
Claim 25	A method for including an advertisement with audio data in an audio signal comprising, providing or creating an audio signal comprising a first section having audio content and an advertisement section having audio content,	pg. 9, lines 9-12
	generating distortion of said first section in a manner recoverable by a key obtainable from said advertisement section,	pg. 10, lines 3-8; pgph bridging pages 11 and 12
	appending said distorted first section to said advertisement section wherein said key is obtainable from said audio content in said advertisement section.	pg. 10, lines 9-10; pg. 12, lines 9-11

Claim 26	A method for including a trial listening section with audio data in an audio signal comprising, sectioning said signal into a first section and a trial listening section	pg. 9, lines 9-21
	generating distortion of said first section in a manner recoverable by a key obtainable from said trial listening section,	pg. 10, lines 3-9; pgph bridging pages 11 and 12
	appending said distorted first section to said trial listening section, wherein the key is obtainable from said advertisement audio content in said section.	pg. 10, lines 9-10; pg. 12, lines 9-11
Claim 27	A method for including an advertisement section and a trial listening section with audio data in an audio signal, including sectioning said signal into a first section, an advertisement section, and a trial listening section, marking at least one of said sections whereby said sections may be identified,	pgph bridging pages 9 and 10
	generating distortion in said first section in a manner recoverable by a key obtainable from at least one of said advertisement and trial listening sections, and	pg. 10, lines 3-9; pgph bridging pages 11 and 12
	appending said distorted first section to said advertisement and trial listening sections to form a composite signal,	pg. 10, lines 9-10; pg. 12, lines 9-11
	wherein said key is obtainable from said audio content in said advertisement section.	pg. 8, lines 3-5; pg. 10, lines 5-9
Claim 28	A method of restricting access to a part of a media signal, comprising the steps of: (a) sectioning said signal into at least two sections each having media content,	pg. 9, lines 9-18
	(b) marking at least one of said sections whereby said sections may be identified,	pg. 9, lines 16-19; pg. 11, lines 6-17
	(c) generating distortion in one of said sections of said signal in a manner recoverable by a key obtainable from or more sections having media content, wherein said key is, obtainable from said media content in said one or more other sections, and	pg. 10, lines 3-9; pgph bridging pages 11 and 12
	(d) appending said distorted section to said one or more other sections to form a composite signal comprising a distorted section and at least one undistorted section.	pg. 10, lines 9-10; pg. 12, lines 9-11

Claim 29	A method of embedding watermarking data in a media content signal, comprising the steps of: (a) incorporating watermarking information into said media content signal using a robust watermarking technique to form a watermarked media content signal,	pg. 8, lines 12-17; pg. 9, lines 4-8
	(b) generating distortion in at least a part of said watermarked media content signal in a manner recoverable by a key, and	pg. 10, lines 3-10; pgph bridging pages 11 and 12
	(c) embedding said key in at least a part of said watermarked media content signal using a fragile data hiding technique, whereby if said watermarking information is corrupted, altered or removed said embedded key is rendered unobtainable from said media content signal.	pgph bridging pages 8 and 9
Claim 33	A watermarked media content signal stored in a memory or on a computer readable medium, comprising: (a) a robust watermark layer comprising watermark information,	pg. 8, lines 12-17
	(b) a fragile quality control information layer comprising a key, and	pgph bridging pages 8 and 9
	(c) a media content layer having one or more sections comprising media content, said section or at least one of said sections if there is more than one section, being distorted in a manner recoverable by use of said key in the fragile quality control information layer;	pg. 7, lines 15-17; pg. 8, lines 2-11; pgph bridging pages 8-9
	whereby if said robust watermark layer is altered, deleted or corrupted the fragile quality control information layer is rendered unreadable such that said key cannot be obtained from it.	pg. 9, lines 4-8

VI.   Grounds of Rejection to be Reviewed on Appeal

The claims on appeal are rejected in the final Office Action under the following grounds:

A.   Claims 1, 3-5, 8-13, 16-30, and 33-36[1] are rejected under 35 U.S.C. §102(e) as anticipated by *Downs* (U.S. Patent No. 6,226,618).

B.   Claims 6, 7, and 14 are rejected under 35 U.S.C. §103(a) as unpatentable over the *Downs* patent in view of *Schneier*, Applied Cryptography, 1996, John Wiley & Sons Inc., pp. 351-353 and 355.

C.   Claim 15 is rejected under 35 U.S.C. §103(a) as unpatentable over the *Downs* patent in view of *Jones* (U.S. Patent No. 6,697,944).

D.   Claims 31 and 32 are rejected under 35 U.S.C. §103(a) as unpatentable over the *Downs* patent in view of *Rhoads* (U.S. Patent No. 5,636,292).

E.   Claims 31 and 32 are rejected under 35 U.S.C. §112, first paragraph for failing to comply with the written description requirement.[2]

F.   Claim 33 is rejected under 35 U.S.C. §112, second paragraph as indefinite.[3]

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[1] Although the Summary Sheet for the Office Action indicates that claim 36 is rejected, the body of the Action does not set forth a rejection of claim 36. Consequently, that claim is not addressed herein, pending clarification of its status and the bases for the rejection of the claim, if any.

[2] In an Advisory Action dated June 6, 2007, the Patent Office did not enter Appellant's amendment but indicated that the amendment would overcome the rejections under 35 U.S.C. §112. As a result, Appellant does not argue the merits of this rejection since it can be easily overcome by amendment.

[3] See Footnote 2.

VII.   Argument

    A.   Downs fails to disclose every element recited in claims 1, 3-5, 8-13, 16-30, and 33-36

    Contrary to the position taken by the Patent Office (PTO) in the final Office Action, *Downs* fails to disclose Appellant's claimed combination of features. Namely, the concept described by Downs in which an audio file contains a metadata section and a content section (i.e., audio content that is divided into at least two sections) is not analogous to Appellant's claimed combination of sectioning a watermarked audio signal and generating distortion in a first one of the sections.

    Downs discloses electronic content delivery system for delivering media content over the Internet. As shown in Figure 8, *Downs* discloses that two separate data packages--Metadata SC (807) and Content SC (812)--are generated to deliver protected content to consumers.

    The Content SC package comprises Content 113, which is described as a watermarked audio signal. Once watermarked the Content SC is encrypted with a subset of "metadata". *Downs* defines metadata as being related to the Content 113 but does not include the Content itself. Namely, <u>metadata related to the Content 113 may be a song title or song credits but not the sound recording of the song</u> (col. 9, lines 21-26). Thus, the Content SC includes Content 113 and non-audio content (i.e., metadata) (col. 18, step 127). The key for decrypting the Content 113 is provided in the Metadata SC data package (col. 18, step 126).

    The Metadata SC package is generated separately and apart from the Content SC through the manual entry or look-up of metadata in a database (col. 51, lines 40-65). The Metadata SC package includes a key for decrypting the Content

SC, as well as metadata, <u>watermarking instructions</u>, content usage conditions, and in some instances a content sample clip (Section D beginning at line 16 of col. 28; Section 4 beginning at line 40 or col. 60). The single promotions section of the Metadata SC file includes the content sample that may arguably be an audio clip. However, even assuming *arguendo* that the sample content is an audio clip, there is no evidence that would lead one of ordinary skill to believe that the audio clip is a portion of the watermarked Content 113 in the Content SC package, a watermarked file in and of itself, or a portion of a sectioned audio file.

In an Advisory Action dated June 6, 2007, the Patent Office alleges that *Downs* discloses Appellant's claimed "sectioning of a watermarked audio signal into at least two sections" through its teaching of an audio file containing a metadata section and a content section. In addition, the Patent Office appears to allege that the Content SC and Metadata SC packages are separate sections of the same audio file. This argument lacks fundamental support for the following reasons:

1. Downs clearly defines metadata as being data that is related to the Content 113 (i.e. audio data), but does not include the Content 113 itself (col. 9, lines 21-27).

2. The Metadata SC file, while it may contain a sample clip, there is no disclosure or suggestion that this sample clip is watermarked or that it is sectioned as recited in Appellant's claims.

3. As shown in Figure 6, Downs discloses that the Content SC and Metadata SC files are generated separately and are in fact separate files. Moreover, these files are not combined to form a single file. The Content SC file is sent to a Content Hosting Site and the Metadata SC

file is sent to a Contents Promotions Website (col. 67, lines 55-62).

The Content Hosting Site and the Content Promotions Website are

separate receiving and processing entities within the context of Downs.

Appellant's claims are distinguishable over *Downs* because *Downs* fails to

disclose or suggest the claimed combination of features.

Claim 1 is distinguishable over Downs

Firstly, the second feature of claim 1 requires "at least two sections, each

section having audio content". As explained above, *Downs* does not disclose a file

having two sections with audio content. Rather, it discloses separate Content SC

and Metadata SC packages, each of which has only one audio section.

Secondly, even assuming *arguendo* that the Metadata SC or Content SC had

more than one audio content section, *Downs* still would not anticipate claim 1,

because claim 1 recites, in part:

> "...(a) incorporating watermarking information into said audio
> signal, to form a watermarked audio signal, and (b) selecting said
> watermarked audio signal into at least two sections each section
> having audio content."

One of ordinary skill would reasonably understand that "sectioning" is the

division of a whole into smaller parts or sections. In the case of claim 1, a

"watermarked audio signal" is sectioned. In contrast, *Downs* discloses that the

Content 113 (which may be an audio signal) is first watermarked and then combined

with metadata. This concept is not analogous to Appellant's claimed "sectioning" of

a watermarked signal, because in *Downs* there is no division of the Content 113 into

sections.

This difference is important because "sectioning" of the watermarked audio

signal into two or more sections, implies that each section contains a portion of the

watermark. Therefore, as a matter of logic the section containing the key will be watermarked and any attempt to remove or alter the watermark will destroy the key and make it impossible to playback the distorted section in undistorted form.

Thirdly, claim 1 recites among other features, "generating distortion in a first one of said sections of said signal". In contrast, *Downs* discloses the use of "encryption". One of ordinary skill would recognize that "encryption" and "distortion" are not the same.

For example, an "audio signal" is by definition playable. After it has been distorted, it is still playable but only in distorted form. On the other hand, an encrypted signal cannot be played back (not even in distorted form) until it is first unencrypted. Support for Appellant's interpretation of "distorted" can be found at page 18, lines 2-3 and page 4, lines 1 to 3 of the Appellant's disclosure, which refer to distorted playback and provides an example of distorting the signal by adding pseudo random noise, respectively.

The fourth feature of claim 1 recites "generating distortion <u>in a first one of said sections of said signal in a manner recoverable by a key obtainable from at least one other section</u> having audio content". In other words, a second section of the signal contains information that can be used to recover a first section of the signal. In comparison, *Downs* discloses that the key for decrypting the Content 113 is not the Content SC package, rather the key is in the Metadata SC package, which is a wholly separate data package that is generated separately and stored in a separate location. The Content SC and the Metadata SC packages cannot reasonably be interpreted as being part of the 'same signal' and therefore *Downs* fails to disclose this feature of claim 1.

Claim 18 distinguishes the concept described in *Downs*

Claim 18 recites "a watermarked audio signal comprising at least two sections each having audio content".

As explained above, *Downs* does not disclose a watermarked audio signal with at least two sections having audio content. Rather, *Downs* discloses two separate data packages -- the Content SC and the Metadata SC -- each of which only has one audio section. The Content SC has one audio section -- the Content 113. The Metadata SC has one audio section -- the audio clip. *Downs* does not appear to contemplate a single signal or file having two sections with audio content. Furthermore, the Metadata SC cannot be a "watermarked audio signal" because *Downs* does not indicate that any of its components are watermarked.

Claim 18 also recites a first section to be recoverable by means of a key obtainable from another audio content section.

Downs fails to disclose a key in the same signal as the content. As explained above, in *Downs* the key for decrypting the audio Content 113 is provided in a separate file (the Metadata SC) which must be downloaded separately.

Claim 33 is not anticipated by Downs

Claim 33 recites, in part, a "media content signal" having:

a)   a robust watermark layer

b)   a fragile quality control information layer comprising a key; and

c)   a media content layer having at least one section which is distorted in a manner recoverable by use of the key.

"Layer" is a term of art. In the context of Appellant's claims, a reasonable interpretation of "layer" implies that the layer is part of the audio signal itself and that

it extends across the whole signal. This interpretation is supported at pages 7 and 8 of Appellant's disclosure and Figure 1, which illustrates the layers extending across the whole signal. Further support can be gleaned from Appellant's disclosure, in the word "layer" being associated with information that extends across the whole signal, and the word "section" being associated with information extending over only a portion of the signal.

Downs does not disclose a quality control layer comprising a key, which as recited in claim 33, is part of the audio signal itself. Rather, Downs discloses that watermarked Content 113 is located in a first data package (the Content SC), and a key for unlocking the content is located in a completely separate data package (the Metadata SC). A reasonable interpretation of Downs cannot include the key being located in a layer of the media content signal, as recited in claim 33.

Furthermore, claim 33 recites that a section of the signal is distorted. Downs, however, discusses "encryption". As explained above, these two concepts are different and cannot be reasonably interpreted as analogous.

Claim 35 is not anticipated by Downs

Claim 35 recites, in part, that a "key is embedded in said audio content of said at least one other section". Stated differently, the key is embedded inside the audio content itself, for example by a fragile data hiding technique. This claim interpretation of the claims is consistent with the accepted meaning of the term "embedded" and is supported in Appellant's disclosure (page 12, lines 5 to 8), which describes an embodiment in which the key is embedded in a pulse code modulated (PCM) audio signal.

Downs discloses a key being stored in a *separate* section of the Metadata SC to the audioclip. Therefore, *Downs* fails to disclose that the key (or information from which the key is obtainable) is embedded inside the audio content itself as recited in claim 35.

In summary, *Downs* fails to establish a prima facie case of anticipation because it does not disclose every element recited in Appellant's claims. Appellant respectfully requests that this rejection not be sustained.

B.   The combination of *Downs* and the *Schneier* document does not render claims 6, 7, and 14 obvious

The PTO acknowledges that *Downs* fails to disclose or suggest the use of a hashing function with respect to the features recited in claims 6, 7, and 14. The PTO relies on the *Schneier* document in an effort to remedy this deficiency. While not acquiescing to its teachings as alleged by the PTO, even assuming *arguendo* that the interpretation of the *Schneier* document is accurate, Appellant respectfully submits that the *Schneier* document does not remedy the deficiencies of *Downs* with respect to sectioning of a watermarked audio signal into at least two sections, and generating distortion in a first section of the audio signal in a manner recoverable by a key obtainable from at least one other section having audio content, as claimed. Rather, the *Schneier* document is merely directed to cryptography techniques and is applied for its discussion on hash functions.

To establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Moreover, obviousness "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination." ACS Hosp. Sys. V.

Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). For

at least these reasons, Appellant respectfully requests that the rejection of claims 6,

7, and 14 under 35 U.S.C. §103 not be sustained.

C. The combination of *Downs* and *Jones* does not disclose every element recited in Claim 15

The PTO acknowledges that *Downs* fails to disclose or suggest that the audio

signal is compressed in an MP3 format, and relies on *Jones* in an effort to remedy

this deficiency. *Jones* is directed to digital content distribution in which a digital

content provider and a portable device establish a trusted relationship through an

authentication interface so that digital content can be securely communicated.

Jones, however, fails to disclose or suggest sectioning of a watermarked signal or

generating distortion as recited in Appellant's claim 1, and thus fails to remedy the

deficiencies of *Downs*. Appellant's respectfully request that this rejection not be

sustained for these reasons.

D. The combination of *Downs* and *Rhoads* fails to establish a *prima facie* case of obviousness with respect to claims 31 and 32

Claim 31 depends from independent claim 29 and additionally recites that

watermarking information is embedded across said at least two sections and said

key is embedded across said at least two sections. Claim 32 depends from claim

31.

The PTO acknowledges that *Downs* fails to disclose or suggest the

aforementioned feature and relies on *Rhoads* in an effort to remedy this deficiency.

Rhoads is directed to a technique of embedding authentication and identification

information in a signal (see Abstract). *Rhoads* discloses embedding an N-bit value

onto an entire signal through the addition of a very low amplitude encodation signal

that has the look of pure noise (col. 5, lines 46-49). However, *Rhoads* fails to disclose or suggest sectioning of a watermarked signal or generating distortion as recited in Appellant's claims. Claim 31 recites that the watermark extends across at least two sections of the audio content and that they key is embedded across said two sections as well. This feature makes the signal very secure, because the watermark cannot be removed without risking destroying the key, and neither section of the signal can be removed without destroying the watermark <u>and</u> making it impossible to recover the key.

Downs does not disclose embedding a key in audio data as recited in claim 31, nor the embedding of a key across two sections of the audio data, with one of said sections being distorted. Accordingly, Appellant respectfully submits that a *prima facie* case of obvious has not been established and request that this rejection not be sustained.

VIII.   Claims Appendix

See attached Claims Appendix for a listing of the claims involved in the appeal.

IX.   Evidence Appendix

No evidentiary exhibits are provided with this Appeal.

X.   Related Proceedings Appendix

No related proceedings are associated with this Appeal.

XI.   Conclusion

Appellant has pointed to errors in the rejection of the claims. Appellant respectfully requests that the final rejection be reversed and the application be returned to the Examiner for prompt allowance.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date   September 27, 2007   By: _____

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The Appealed Claims

1.   (Previously Presented) A method of embedding watermarking data in an audio signal, comprising the steps of:

(a)   incorporating watermarking information into said audio signal, to form a watermarked audio signal,

(b)   sectioning said watermarked audio signal into at least two sections each section having audio content,

(c)   marking at least one of said sections whereby said sections may be identified,

(d)   generating distortion in a first one of said sections of said signal in a manner recoverable by a key obtainable from at least one other section having audio content, and

(e)   appending said distorted section to said at least one other section to form a composite signal comprising a distorted section and at least one undistorted section.

2.   (Cancelled)

3.   (Previously Presented) A method as claimed in claim 35 wherein said distortion is generated by creating a pseudo-random number sequence for adding as pseudo-random noise to said first section, and wherein said pseudo-random number sequence is embedded in said at least one other section to enable said random noise to be subsequently removed.

4.   (Previously Presented) A method as claimed in claim 35 wherein the first section is distorted by means of a scrambling function.

5.   (Previously Presented) A method as claimed in claim 1 wherein said key is obtained directly from a sequence of bits contained in said audio content of at least one other section.

6. (Previously Presented) A method as claimed in claim 5 wherein said key is obtained by applying a hashing function to the bit sequence of said audio content of said at least one other section.

7. (Previously Presented) A method as claimed in claim 6 wherein the output of the hashing function is added to the bitstream of said first section to create said distortion.

8. (Previously Presented) A method as claimed in claim 5 wherein a bitstream of said first section is subject to a scrambling function to create said distortion.

9. (Original) A method as claimed in claim 1 wherein said first section comprises a section to which access is to be restricted.

10. (Original) A method as claimed in claim 1 wherein said at least one other section comprises an advertisement.

11. (Original) A method as claimed in claim 1 wherein said at least one other section comprises a trial listening section.

12. (Original) A method as claimed in claim 1 wherein said at least one other section comprises an advertisement section and a trial listening section.

13. (Original) A method as claimed in claim 1 wherein said audio signal is compressed after watermarking.

14. (Original) A method as claimed in claim 13 wherein said first section of said compressed signal is distorted by means of a scrambling function that receives as a key the output of a hashing function that acts upon said at least one other section.

15.   (Original) A method as claimed in claim 14 wherein said audio signal is compressed in MP3 format and said scrambling function acts upon the bits contained within MP3 frames.

16.   (Original) A method of playing back an audio signal having data embedded within it by the method of claim 1, comprising;
   (a)   reading said composite signal,
   (b)   identifying said sections,
   (c)   obtaining said key from said at least one undistorted section, and
   (d)   recovering said distorted section.

17.   (Original) A method as claimed in claim 16 wherein said distorted section is recovered in real time without being written to memory.

18.   (Previously Presented) A watermarked audio signal stored in a memory or a computer readable medium comprising at least two sections each having audio content, including a first section which is distorted in a manner recoverable by means of a key obtainable from audio content in at least one other section.

19.   (Original) A watermarked audio signal as claimed in claim 18 wherein said first section is a section to which access is restricted.

20.   (Original) A watermarked audio signal as claimed in claim 18 wherein said at least one other section is an advertisement section.

21.   (Previously Presented) A watermarked audio signal as claimed in claim 18 wherein said at least one other section comprises a trial listening section.

22.   (Previously Presented) A watermarked audio signal as claimed in claim 18 wherein said at least one other section comprises an advertisement section and a trial listening section.

23.   (Previously Presented) An apparatus for embedding watermarking data in an audio signal, comprising:

(a)   means for incorporating watermarking information into said audio signal to form a watermarked audio signal,

(b)   means for sectioning said watermarked audio signal into at least two sections each having audio content,

(c)   means for marking at least one of said sections whereby said sections may be identified,

(d)   means for generating distortion in one of said sections of said signal in a manner recoverable by a key obtainable from at least one other section having audio content, and

(e)   means for appending said distorted section to said at least one other section to form a composite signal comprising a distorted section and at least one undistorted section.

24.   (Original) Apparatus for the playing back an audio signal having data embedded within it by the method of claim 1, comprising;

(a)   means for reading said composite signal,

(b)   means for identifying said sections,

(c)   means for obtaining said key from said at least one undistorted section, and

(d)   means for recovering said distorted section.

25.   (Previously Presented) A method for including an advertisement with audio data in an audio signal comprising, providing or creating an audio signal comprising a first section having audio content and an advertisement section having audio content, generating distortion of said first section in a manner recoverable by a key obtainable from said advertisement section, and appending said distorted first section to said advertisement section wherein said key is obtainable from said audio content in said advertisement section.

26.   (Previously Presented) A method for including a trial listening section with audio data in an audio signal comprising, sectioning said signal into a first section and a trial listening section generating distortion of said first section in a

manner recoverable by a key obtainable from said trial listening section, and appending said distorted first section to said trial listening section, wherein the key is obtainable from said advertisement audio content in said section.

27. (Previously Presented) A method for including an advertisement section and a trial listening section with audio data in an audio signal, including sectioning said signal into a first section, an advertisement section, and a trial listening section, marking at least one of said sections whereby said sections may be identified, generating distortion in said first section in a manner recoverable by a key obtainable from at least one of said advertisement and trial listening sections, and appending said distorted first section to said advertisement and trial listening sections to form a composite signal, wherein said key is obtainable from said audio content in said advertisement section.

28. (Previously Presented) A method of restricting access to a part of a media signal, comprising the steps of:

(a) sectioning said signal into at least two sections each having media content,

(b) marking at least one of said sections whereby said sections may be identified,

(c) generating distortion in one of said sections of said signal in a manner recoverable by a key obtainable from or more sections having media content, wherein said key is, obtainable from said media content in said one or more other sections, and

(d) appending said distorted section to said one or more other sections to form a composite signal comprising a distorted section and at least one undistorted section.

29. (Previously Presented) A method of embedding watermarking data in a media content signal, comprising the steps of:

(a) incorporating watermarking information into said media content signal using a robust watermarking technique to form a watermarked media content signal,

(b) generating distortion in at least a part of said watermarked media content signal in a manner recoverable by a key, and

(c)   embedding said key in at least a part of said watermarked media content signal using a fragile data hiding technique, whereby if said watermarking information is corrupted, altered or removed said embedded key is rendered unobtainable from said media content signal.

30.   (Previously Presented) A method according to claim 29 wherein said media content signal is an audio signal.

31.   (Previously Presented) A method according to claim 29 wherein said media content signal has at least two sections, said watermarking information is embedded across said at least two sections and said key is embedded across said at least two sections.

32.   (Previously Presented) A method according to claim 31 wherein said media content signal is an audio signal.

33.   (Previously Presented) A watermarked media content signal stored in a memory or on a computer readable medium, comprising:

(a)   a robust watermark layer comprising watermark information,

(b)   a fragile quality control information layer comprising a key, and

(c)   a media content layer having one or more sections comprising media content, said section or at least one of said sections if there is more than one section, being distorted in a manner recoverable by use of said key in the fragile quality control information layer;

whereby if said robust watermark layer is altered, deleted or corrupted the fragile quality control information layer is rendered unreadable such that said key cannot be obtained from it.

34.   (Previously Presented) A watermarked media content signal according to claim 33 wherein said media content is audio content.

35.   (Previously Presented)   A method according to claim 1 wherein said key is embedded in said audio content of said at least one other section.

36.   (Previously Presented) A method according to claim 35 wherein said key is embedded using a fragile data hiding technique.

IX. EVIDENCE APPENDIX

X. RELATED PROCEEDINGS APPENDIX